



Stanley in middle explains to W. Gould Brokaw and E. V. Hartford all about his fast steamer

on the other hand, the increased complication which such a device would entail, the difficulty in making it operative at all times, and the slight increase in efficiency which would probably result from its use would make its practical utility somewhat doubtful. In large motors of, say 100 H. P. and over, the saving might be sufficient to warrant the use of some such device; but for the more common sizes of lesser power it would seem that refinement and development would have to proceed along other lines, and that for some time to come the rough governing of the circulation in direct ratio to the speed of the motor would have to be "good enough."

Some Observations on Acetylene

Acetylene gas is generated by the chemical decomposition of water and calcium carbide. It is a permanent gas and of greater density than the ordinary coal gas, though less in volume per unit of weight. It will pass through a smaller aperture than ordinary coal gas. Notwithstanding the fact that this is a high power illuminant, no case of asphyxiation from it has so far been reported.

The composition of calcium carbide, which forms the principal ingredient of this gas, is formed from a mixture of about 60 per cent. of lime and 40 per cent. of powdered coke. This mixture is subjected to intense heat, by which the carbon of the coke is enabled to chemically unite with the lime. When the mass cools it is crushed to commercial sizes, and is carried in iron drums that are air and water tight. The calcium carbide has an intense affinity for water and must be kept from contact with even the moisture of ordinary air. The chemical transformation which takes place when water is added to the carbide may be represented as follows: $\text{Ca C}_2 + \text{H}_2\text{O} = \text{C}_2\text{H}_2 + \text{Ca O}$, when expressed in words the formula reads, Calcium carbide plus water gives acetylene gas and slaked lime. Any excess of water simply makes a solution of lime, which may be used for the making of mortar or the lime-washing of walls and buildings.

The problem of storage of this gas has been very successfully met by the Commercial Acetylene Company, of New York, in what they call their dissolved system. A storage cylinder made of the highest quality of sheet steel is used, which is guaranteed to stand a pressure of 1,200 pounds per square inch. This cylinder is fully filled with perfectly fitting disks of asbestos, which have a porosity of about 80 per cent. By means of suitable apparatus this cylinder is filled with acetone, equal to 43 per cent. of the volume of the storage tank.

Acetone is a liquid produced by the destructive distillation of woody fiber and is similar to wood alcohol. When in the storage cylinder it completely saturates the asbestos. One of the properties of this liquid is its ability to dissolve acetylene at ordinary temperatures. Acetone dissolves 23 volumes of acetylene at 62° F. The storage cylinder is charged with acetylene up to 150 pounds pressure.

